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AVIONICS MASTER PLAN: DATA BASE MECHANIZATION ARCHITECTURE,(U)
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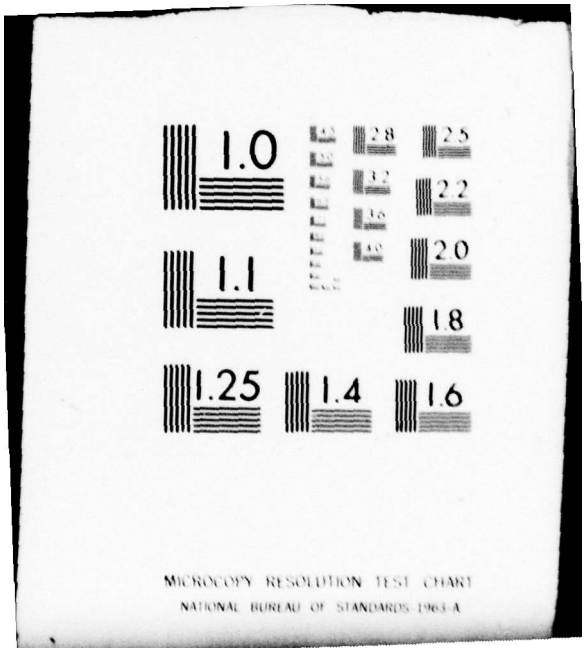
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Publication 1743-01-1-1963

AVIONICS MASTER PLAN: LEVEL II

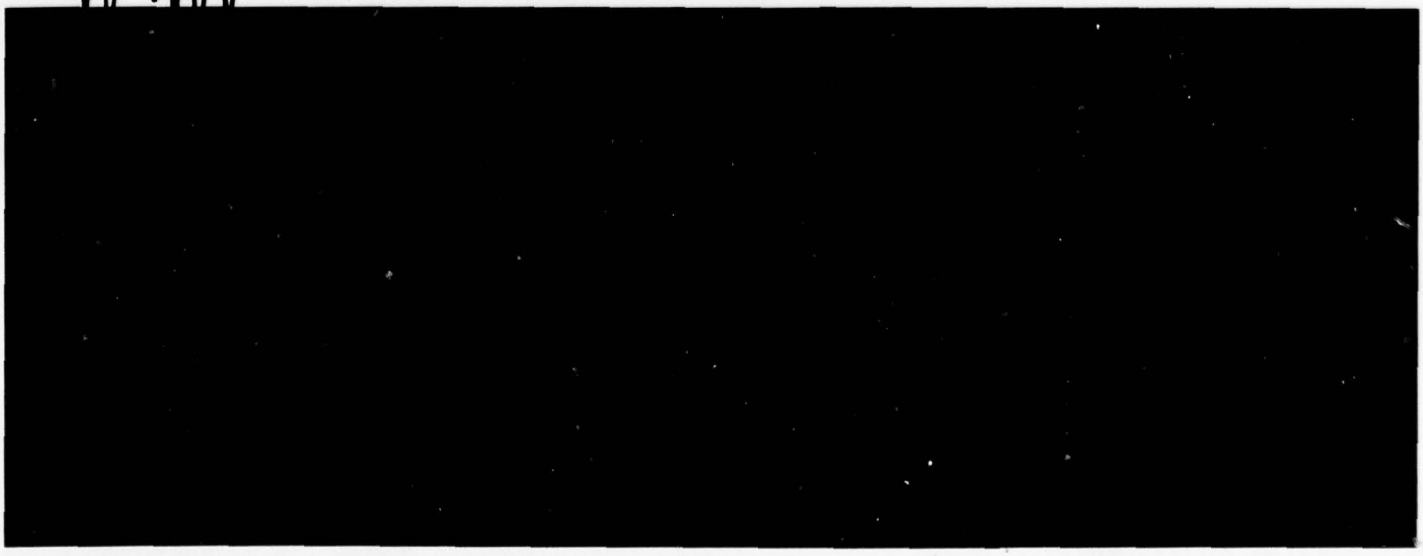
DATA BASE MECHANIZATION ARCHITECTURE

June 1979

Prepared for

THE AVIONICS PLANNING DIRECTORATE (ASD/XRE)
AND THE DEPUTY FOR AVIONICS CONTROL (ASD/ALD/AX)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433
under Contract F33657-79-C-0475

ARINC RESEARCH CORPORATION



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by

J. Maguire
M. Berger

ARINC Research Corporation
a Subsidiary of Aeronautical Radio, Inc.
2551 Riva Road
Annapolis, Maryland 21401

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FOREWORD

This report summarizes ARINC Research activities described in Section 4.3, Statement of Work, of Contract F33657-79-C-0475. The technical effort addressed the development of the architecture for mechanizing the program tracking system used by the Deputy for Avionics Control (ASD/AX) in the Avionics Master Plan (AMP) preparation and in the avionics control function. The tracking system methodology was previously developed by ARINC Research under Contract F04606-76-A-0087/SG04.

The effort described in this document was sponsored by the Aeronautical Systems Division, Deputy for Development Planning (ASD/XRE). The material presented is to be utilized by the ASD Data Processing facility (ADP) in its coding and implementation of the AMP data base storage and retrieval program on the DEC PDP 11T60 computer for use by the Deputy for Avionics Control.

CONTENTS

CHAPTER ONE

INTRODUCTION

1.1 SCOPE

This report summarizes the results of ARINC Research technical activity sponsored by the U.S. Air Force under Contract F33657-79-C-0475, Statement of Work, Section 4.3. This activity included the development of the architecture for mechanizing the program tracking system used by the Deputy for Avionics Control (DAC) in the Avionics Master Plan (AMP) preparation and in its avionics control function.

The methodology for the referenced program tracking system was previously developed by ARINC Research under Contract F04606-76-A-0087/SG04 and is described in our publication 1968-01-2-1944 of June 1979. The major thrust of the current effort was to adapt the methodology to a computerized system that would provide the DAC with a powerful and useful data base storage and retrieval tool. Our work was limited to software architecture development and the results will be used by the ASD Data Processing Facility, which will code and implement the data base system program on the DEC PDP 11T60 computer.

1.2 BACKGROUND

AFR 800-28, *Avionics Development and Support*, assigns to the Deputy for Avionics Control the following responsibilities:

- Provide a common data base and central point of contact for all avionics acquisition, modification, and support programs
- Identify new programs in response to needs, requirements, and directives
- Ensure that planned avionics systems are compatible with existing and other planned avionics systems
- Consider the use of common avionics equipment in all new aircraft systems
- Assess on-going and proposed avionics developments
- Identify needed trade-off, cost benefit, or simulation studies and ensure that they use a common data base

- Develop and maintain the Air Force Avionics Master Plan

In order for the DAC to perform the avionics controlling function described above, it was recognized that a single and centralized data base maintained by the DAC and containing current information on avionics programs was required. It was further determined that the data base should be mechanized so that the data could be utilized and updated promptly by the DAC without an undue burden on manpower resources. The resulting architecture presented in this report, when implemented, will provide the required data base capability.

1.3 TECHNICAL TASKS

Our contractual requirement is to develop the architecture for mechanizing the program tracking system used by the DAC in the AMP preparation and in the avionics control function. The statement of work stipulates that ARINC Research is to perform the following tasks:

- Design and define the data base and describe the input and output processes and algorithms required for data presentation, manipulation, and updating
- Document the results in a summary report

In addition to the contractual requirements, we were provided with the following additional guidance:

- The architecture developed should be compatible with and suitable for programming on the DEC PDP 11T60 computer.
- The data base should contain only the data needed by the DAC to perform analyses or to compile supporting material for development of an avionics investment strategy and for influencing decisions related to avionics control.
- The data base should complement to the maximum extent, rather than duplicate, information contained in the Avionics Planning Baseline data base.

1.4 TECHNICAL APPROACH

We used the results of a previous effort -- the development of the AMP Implementation and Tracking System Methodology -- as a starting point for this work. We also considered the architecture of the Avionics Planning Baseline data base as a model from which to begin development of this data base.

The logical data base record compatible with the PDP-11 was designed and a general form was prepared to be used for inputting avionics program data suitable for keypunching.

Discussions with ASD/AXP were held to determine what specific types of output the DAC might require from this data base. Example output presentations were then devised and the data manipulation processes required to produce these data summaries were developed. Logic diagrams depicting the process are presented in the report.

In the interest of flexibility, the data base architecture was also designed so that more general sorting/screening of the data may be accomplished to support specific user needs not covered by the overall data summary formats.

While it is expected that the data base will initially be accessed through an indirect batch processing method, the concept of a real time interactive mode of data base access using a terminal and a "conversational" approach to data requests is possible with this architecture.

1.5 REPORT ORGANIZATION

The remainder of this report is organized into the following sections:

- Chapter Two describes the data base architecture including input and output processing, data base record format, and a sample data input sheet.
- Appendix A contains logic diagrams and related program sequence statements describing the details of the data input processing methodology and algorithms.
- Appendix B contains logic diagrams and related program sequence statements describing the data output processing, including software algorithms for producing selected data summaries.
- Appendixes C and D contain lists of abbreviations and codes that should be used for inputting avionics program data and creating the AMP data base. These will permit comments, titles, and long alphanumeric symbols to be coded, printed, and stored in a concise manner.

CHAPTER TWO

DEVELOPMENT OF THE AVIONICS MASTER PLAN DATA BASE ARCHITECTURE

2.1 INTRODUCTION

This chapter describes the basic architecture for a computerized Avionics Master Plan (AMP) program tracking system data base. The data base has been designed to provide the Deputy for Avionics Control (DAC) with a flexible management tool that will assist in the development of an avionics investment strategy for the AMP and in tracking the progress of avionics programs represented by this strategy.

It is the intent that the results presented in this report will be used by ASD/ADP as the basis for developing the program code to implement the data base storage and retrieval system and by ASD/AXP in the creation and update of the mechanized AMP data base itself.

2.2 OVERVIEW OF DATA BASE STRUCTURE

This data system is a portion of a comprehensive data base being developed by the Deputy for Avionics Control.

As currently envisioned, the data base will consist of three structured files as depicted in Figure 2-1: an aircraft-oriented file, representing the present planning status by each aircraft type shown in the force structure over the next fifteen years; an equipment-oriented file, providing additional details on specific equipments installed or planned to be installed on these aircraft; and a program-oriented file, which represents the status and future application of programs proposed for the current budget year and subsequent years.

The aircraft-oriented file is being employed for two primary purposes. One is to update the current Avionics Planning Baseline (APB), using a print format similar to that of the current manually produced publication. Another is to make retrievals assessing the effect of changes to input parameters such as force structures and installation schedules. This portion of the data base has been established by the ASD computer center (ASD/ADP).

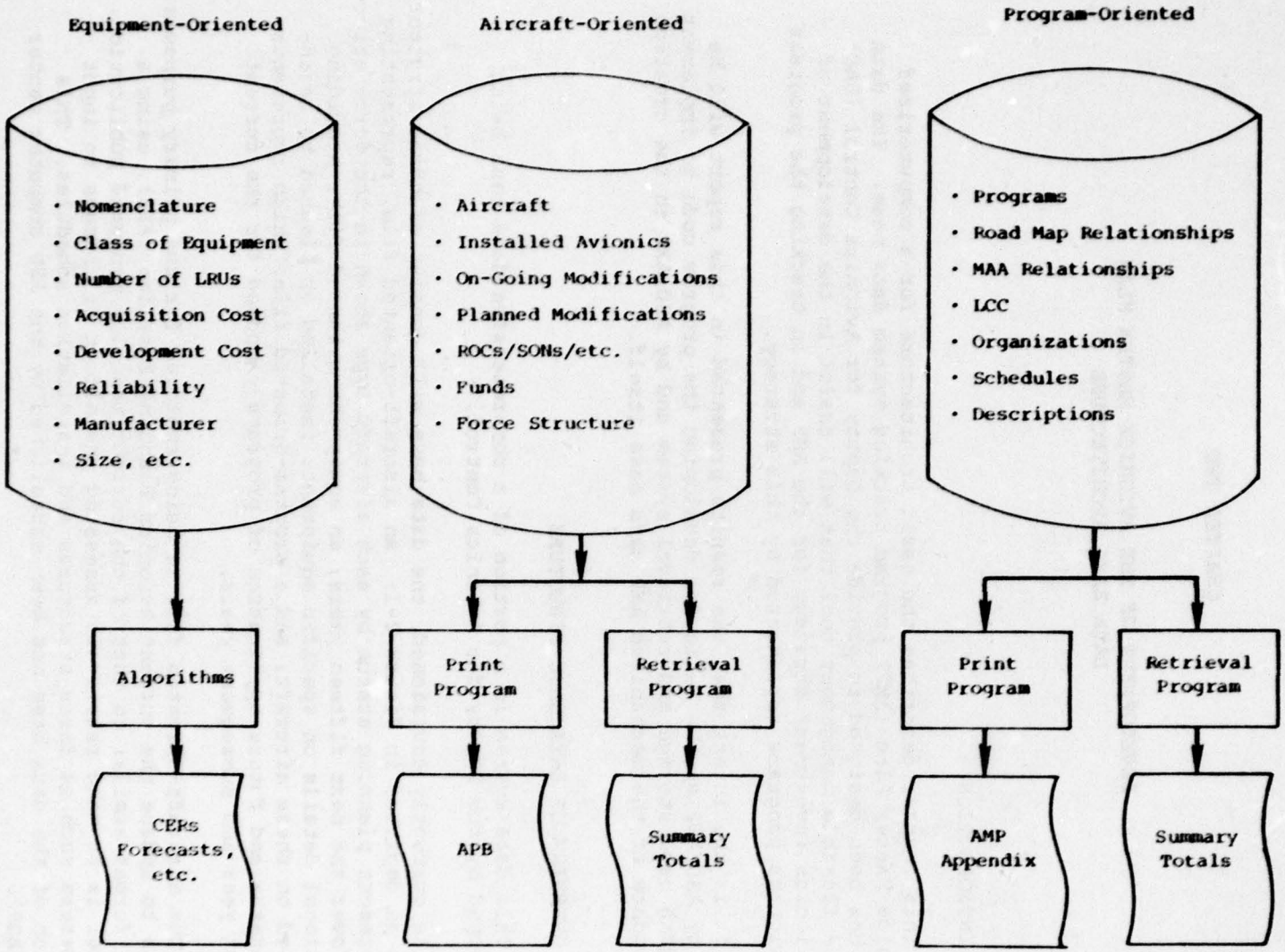

Figure 2-1. OVERALL DAC DATA BASE STRUCTURE

The output of the equipment-oriented file is to be used as an analytic tool for cost forecasts and to develop cost-estimating relationships (CERs). These data must be passed initially through a series of algorithms for normalizing the data to the same fiscal year baseline, the same cost-quantity baseline, and other pertinent qualifiers such as class, size, and reliability of the equipment and the associated line replaceable units (LRUs).

The output of the program-oriented file, which is the subject of this report, is envisioned to be available in two formats. One is a tabular listing essentially matching the input format. The second is one of several presentations of these data in summary format. The first format output will be used as an appendix to the annual Avionics Master Plan. The second format is to be used as a basis for interpreting the effect of program cancellations, schedule shifts, and the like.

At the present time, it is contemplated that the data system will be implemented by means of the PDP-11 configuration installed in the computer center. Our architecture has been based on optimum packing of data in 128-byte records suitable for floppy disc storage. Interfaces between the three primary files do not appear to be necessary; however, commonality in data look-up tables, coding language, and nomenclature will be preserved where possible.

The following sections describe the architecture as it relates to various facets of the data base design, i.e., data base input (creation and update) and data base output (presentation). Logic diagrams, tables, and figures supporting these areas are also presented in the appendixes, as indicated.

2.3 DATA BASE INPUT

Although the data base will be sorted on various fields for analyses, it is sequenced in the computer by program element, project, and task. Data will be entered by cards into the master data base, edited for proper card format, and sorted onto the master data base. The data base is entered by cards keypunched from the format shown in Figure 2-2. The data base is then used by various programs to present the data by printed output.

The data input process involves both the data base initialization (creation) and maintenance (update). The update function consists of changing current data, deleting data, or merging new data into the current master file. Column 79 on the input cards is used to denote whether the data are to be added (A), changed (C), or deleted (D) from the data base. In all cases the edit capability will validate the input data for proper format, list any cards in error, and print the entire new master data base including those data accepted for and entered into the master file. Detailed descriptions of the input process, including logic diagrams and program sequence statements, are contained in Appendix A.

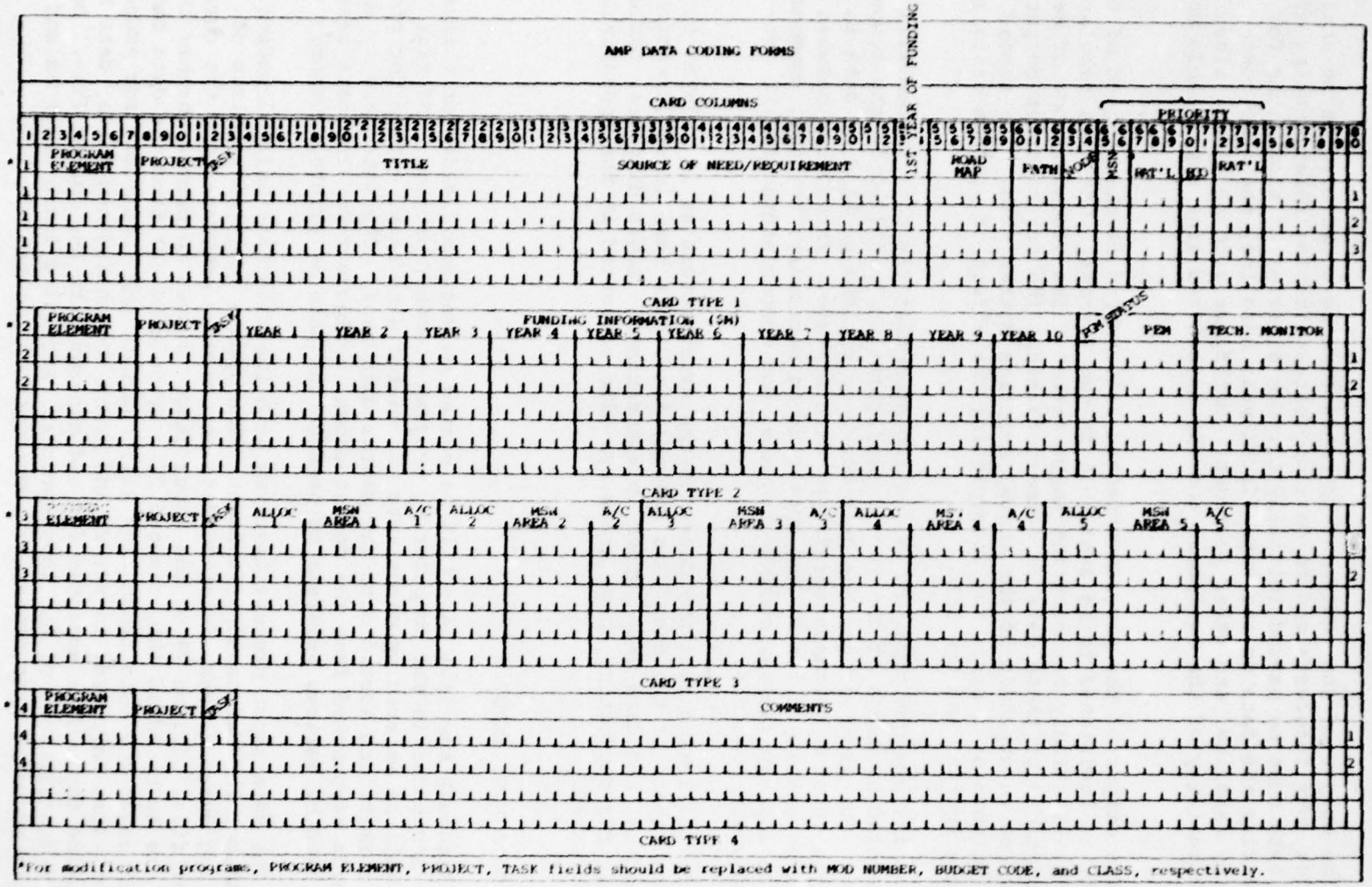

Figure 2-2. DATA INPUT CODING FORM

The card input process uses four card types. Each card has the card type printed in column 1 and the identifying program element, project, and task in columns 2 through 13. Column 80 is used to number each card type in sequence. This is necessary when multiple cards are required for a given sequential file data record. Tables 2-1 through 2-5 present the descriptions and notational conventions for the identifying data elements. We suggest that alphanumeric data entered into the coding form be left-justified and numeric data be right-justified. The notations cited may be modified or enhanced as the development of the data base evolves and are not intended to be all-inclusive at this time.

Each of the four card types is described below.

2.3.1 Card Type 1

In addition to the identifiers, Card Type 1 contains the text for the title in columns 14 through 33, and source of need or requirement in columns 34 through 52. There is no sorting on these fields. The "1st year of funding input", columns 53-54, is used to enable the computer program to align the funding year on Card Type 2. That is, if the first year of funding input is 1981, the funds for year 1 will be stored in the data base table under 1981; the funds for year 2 will be stored under 1982, etc.

The road map, identified in columns 55 through 59, is the avionics functional area planning road map to which the program can be related and is a field that can be sorted. The associated path and node are contained in columns 60 through 64. The codes to be used for identifying road maps are presented in Table 2-2. Additional codes generated for other road maps developed should not exceed five characters.

The priorities are broken down into a mission need value, columns 65 and 66, and an economic need value, columns 70 and 71. An overall figure-of-merit can be calculated from these two priorities, but is not considered here. However, columns 75 through 78 may be used in the future for this purpose. The coded rationale for the mission need is in columns 67 through 69, and the rationale for economic need is in columns 72 through 74. There may be one or two additional type 1 cards to allow for multiple road map effects on a given program. For the additional type 1 cards, the card type, program element, project, and task must be entered as well as the road map, path, and node information. The remainder of the card can be left blank. Table 2-2 presents the data element descriptions and notations for Card Type 1.

2.3.2 Card Type 2

In addition to the identifiers, program element, project, and task, Card Type 2 contains data related to funding for up to ten years in

Table 2-1. DATA ELEMENT DESCRIPTIONS AND NOTATIONAL CONVENTIONS FOR DATA INPUT COMMON TO ALL FOUR CARD TYPES

Element	Description	Notational Convention
Program Element/ Mod number	The alphanumeric identification of a specific program element or modification number, either existing or proposed, pertaining to the road map.	Up to 6 character alphanumeric (e.g., 64201, 62702, 63XXX, F2908, 12345B).
Project/Budget Code	Breakdown of R&D program into specific efforts or technical areas or modification program into appropriate budget code.	Four-digit numeric (i.e., Project 5581, Budget Code 1100).
Task/Mod Class	Task/modification class (e.g., 09, IV or V).	Up to two-digit R&D task number or Roman numeral of modification class (e.g., IV, V).

Table 2-2. DATA ELEMENT DESCRIPTIONS AND NOTATIONAL CONVENTIONS FOR DATA INPUT FOR CARD TYPE 1

Element	Description	Notational Convention
Title	Phrase, title, or acronym describing the program element/project or mod program/task, either as it is widely known in the avionics community (e.g., AWTSS, EW Master Plan, WILD WEASEL/ APR-38) or as it best portrays the purpose of the program effort. Some of the suggested abbreviations and expansions for use in completing this and other portions of the worksheet are provided in Appendix C.	Title for the program, project, mod entry (use of abbreviations listed in Appendix C is encouraged).
Source of Need/ Requirement	The primary basis upon which the program was initiated or is proposed. For example, this might be a validated or draft user requirement (SON, ROC, GOR), a mission-oriented need (MAA result, MENS), or an economic consideration (LCC payback from development, acquisition, or support savings).	ROC, GOR, SON in user notation (e.g., TAF 30-79) MAA - MAA Scenario: CC - Central Conflict TC - Theater Conflict IM - Implementation MO - Mobility OR - Orientation Economic - ECON
First Year of Funding	First fiscal year in which item is to be funded. In the case of an on-going program, the current budget year should be entered. This year corresponds with Year 1 under "Funds".	Last two digits of the first fiscal year in which funding is approved or recommended. For on-going programs, it is the current fiscal year.
Road Map	The specific functional planning road map to which the remaining data across the sheet apply, e.g. Target Detection and Validation (TD/V), Software Modeling (SWM), Test and Evaluation (TE). These road maps were initially developed at the second annual Avionics Planning Conference (Nov. 1978).	Target Detection and Validation (TD/V), Navigation Launch and Release (NLR), Avionics Communications and Information Processing (ACIP), Survivability Electronic Warfare (EW), Survivability Cooperative Effects (COE), Survivability Hardening (HARD), Availability (AV), Standardization Core Avionics Architecture (STCA), Standardization Common/Commercial (STCC), Test and Evaluation (TE), Software Policy (SWP), Software Model (SWM), Software Testing (SWT), Software Support (SWS).

Table 2-2. (continued)

Element	Description	Notational Convention
Path	The road map path (Roman numeral) representing a planning alternative on which the program element is addressed.	Roman numeral corresponding to road map path.
Node	The road map path decision or activity node (letter or Arabic number) to which the program element applies.	Letter or Arabic numeral related to road map node.
Priority (MSN Need, ECON Need)	The emphasis to be given to the program/effort from the standpoint of need or requirement and fiscal consideration on the basis of the DAC ranking scheme.	Number from 1 - 99.
Rationale	A reference code describing the rationale for the ranking value selected.	MSN Need (examples): SM - Single Mission Area Impact MM - Multiple Mission Area Impact DR - Draft Requirement SR - Single Requirement MR - Multiple Requirements Economic Need (examples): ST - Standard Avionics LH - Life-Cycle Cost (High Confidence) LL - Life-Cycle Cost (Low Confidence) FM - Force Multipler

Table 2-3. DATA ELEMENT DESCRIPTIONS AND NOTATIONAL CONVENTIONS FOR DATA INPUT FOR CARD TYPE 2

Element	Description	Notational Convention
Funding Information	Proposed or approved funding level by fiscal year in millions of dollars and fractions thereof as appropriate. Recommended or estimated funding which is not specifically approved for that program/project will be distinguishable: The approved funding baseline is the current President's Budget. Year 1 should correspond to the "First Year of Funding" entry previously described.	Entries to the nearest $0.1M. Negative values will be input to represent estimated or recommended funding, not yet approved. These recommended funding values will be printed in parentheses ( ) in the output format.
Program Status	The current status of the program in the acquisition or modification cycle (e.g., engineering development, advanced development, production, installation or on-going mod, delayed funding or cancelled).	Exploratory Development (XD), Advanced Development (AD), Engineering Development (ED), Acquisition (PP), Proposed Follow-on to Current Program (PO), On-Going Modification (OG), Planned (PL), Cancelled (CC).
PEM	The Program Element Monitor for the program cited.	Program Element Monitor Code (e.g., RDPDV, LEYY).
Technical Monitor	The Government activity performing the work or monitoring the technical aspects if the work is being performed by contractors, as appropriate. If a proposed program is involved, then the suggested activity is listed and distinguished by parentheses ( ).	Appropriate organization performing program effort or technical monitor of contractor effort (e.g., AFAL, NAVAIR, ASD/XRE).

Table 2-4. DATA ELEMENT DESCRIPTIONS AND NOTATIONAL CONVENTIONS FOR DATA INPUT FOR CARD TYPE 3

Element	Description	Notational Convention
Allocation (Alloc)	The fractional value used to allocate the program to either aircraft type or mission area, as appropriate. Allocations to several mission areas or aircraft types should be derived using the method developed previously and presented in ARINC Research publication 1968-01-2-1944.	Fraction up to four decimal places.
MSN Area	List of the applicable mission areas to which the program can be related (e.g., reconnaissance, strategic defense).	Air-to-Surface (A/S), Reconnaissance (RECCE), Counter Air/Air (CA/A), Counter Air/Ground (CA/G), Strategic Offense (STOFF), Strategic Defense (STDEF), Tactical Mobility (TMOB), Strategic Mobility (SMOB), Training (TR), All Tactical (A/T), All Strategic (A/ST), All Mobility (A/M).
Aircraft Type (A/C)	The aircraft types to which the program applies (e.g., F-106, A-10, B-52G/H). If the program relates generally to the Air Force fleet or if the specific aircraft type(s) are not known, then special codes should be used.	Three-digit code (see table in Appendix D).

Table 2-5. DATA ELEMENT DESCRIPTIONS AND NOTATIONAL CONVENTIONS FOR DATA INPUT FOR CARD TYPE 4

Element	Description	Notational Convention
Comments	Section used to enhance, clarify, or emphasize program data (e.g., "funding recently increased", "parallel effort on-going in the Navy").	Free-form narrative; use for amplifying remarks or to reference a previous program from which this program evolved (e.g., 64YYY transitioned from 63XXX or 64YYY now includes previous 64ZZZ).

columns 14 through 63. If additional years of funding are to be entered, one additional Card Type 2 may be used. In this case, the "year 1" field will actually be interpreted as "year 11"; "year 2" will be interpreted as "year 12", etc. When two cards are needed, columns 64 through 78 can remain blank on the second card.

In general, estimated or recommended funding that is not yet approved must be entered as a negative value. When output, the value will be printed in parentheses to distinguish it.

The program status is entered in columns 64 and 65; PEM, in columns 66 through 70; and the technical monitor, in columns 71 through 78.

A blank entered for any funding year will be printed as a blank. Therefore, if a zero-level of funding (approved or recommended) is the desired response, "0" should be entered as appropriate. Table 2-3 presents the data element descriptions and notations for Card Type 2.

2.3.3 Card Type 3

In addition to program element, project, and task identifiers, Card Type 3 contains the weighted allocation, mission area, and aircraft type for up to five allocations. The allocation is a four-place decimal amount, with the decimal point understood (.XXXX). An allocation of 1.0 can also be inserted in this field. For each allocation, there is a mission area (up to 5 characters) and/or a coded aircraft type (3-digit code, see Appendix D). There may be a maximum of two type 3 cards. Table 2-4 presents the data element descriptions and notations for Card Type 3.

2.3.4 Card Type 4 (Optional)

In addition to the program element, project, and task identifiers, Card Type 4 uses columns 14 through 77 for comments. The reference to a previous program element for follow-on or consolidated programs should be noted in the comments field. At present only two type 4 cards will be maintained in the data base. The use of abbreviations is encouraged. Table 2-5 presents a brief description of the data for Card Type 4.

2.4 MASTER DATA BASE RECORD FORMAT

Table 2-6 presents the recommended data base record format for the master data storage. When its form has been approved, it will be used during both input and output processing.

It is envisioned that floppy disks will be used for data base storage. The data base record format is designed in block increments of 128 bytes. If a particular program element data set requires no type 4 cards and only

Table 2-6. LOGICAL DATA BASE RECORD FORMAT

Bytes	Primary Data Block Data Element
1-6	Program Element/Modification Number
7-10	Project/Budget Code
11-12	Task/Modification Class
13-32	Title
33-51	Source of Need or Requirement
52-53	First Year of Funding
54-58	Road Map
59-61	Path
62-63	Node
64-65	MSN Need (Priority)
66-68	Rationale (MSN Priority)
69-70	Economic Need (Priority)
71-73	Rationale (ECON Priority)
74-78	1980 Funding
79-83	1981 Funding
84-88	1982 Funding
89-93	1983 Funding
84-98	1984 Funding
99-103	1985 Funding
104-108	1986 Funding
109-113	1987 Funding
114-118	1988 Funding
119-123	1989 Funding
124-128	1990 Funding
129-133	1991 Funding
134-138	1992 Funding
139-143	1993 Funding
144-148	1994 Funding
149-153	1995 Funding
154-158	1996 Funding
159-163	1997 Funding
164-168	1998 Funding
169-173	1999 Funding
174-175	Program Status
176-180	PEN
181-188	Technical Monitor
189-192	Allocation (1)
193-197	MSN Need (1)
198-200	ACFT Type (Coded) (1)
201-204	Allocation (2)
205-209	MSN Need (2)
210-212	ACFT Type (Coded) (2)
213-216	Allocation (3)
217-221	MSN Need (3)
222-224	ACFT Type (Coded) (3)
225-228	Allocation (4)
229-233	MSN Need (4)
234-236	ACFT Type (Coded) (4)
237-240	Allocation (5)
241-245	MSN Need (5)
246-248	ACFT Type (Coded) (5)
249-254	Future Growth
255	Additional Block Indicator* (For optional Type 4 Card data)
256	Additional Block Indicator* (For optional Type 1 and/or Type 3 Card data)

Additional Data Block for Optional Type 1 and Type 3 Cards

Bytes	Primary Data Block Data Element
1-4	Allocation (6)
5-9	MSN Area (6)
10-12	ACFT Type (Coded) (6)
13-16	Allocation (7)
17-21	MSN Area (7)
22-24	ACFT Type (Coded) (7)
25-28	Allocation (8)
29-33	MSN Area (8)
34-36	ACFT Type (Coded) (8)
37-40	Allocation (9)
41-45	MSN Area (9)
46-48	ACFT Type (Coded) (9)
49-52	Allocation (10)
53-57	MSN Area (10)
58-60	ACFT Type (Coded) (10)
61-65	Second Road Map
66-68	Second Path
69-70	Second Node
71-75	Third Road Map
76-78	Third Path
79-80	Third Node
81-128	Future Growth

Additional Data Block for Optional Type 4 Cards

Bytes	Primary Data Block Data Element
1-64	Comments (First Type 4 Card)
65-128	Comments (Second Type 4 Card)

*When both additional data block types exist in a record, the block consisting of Type 1 and Type 3 Card data will always appear first.

one type 1 and one type 3 card, a basic 256-byte block is required. One additional 128-byte block is required in either of two cases:

- One or two type 4 "Comments" cards are used.
- Additional or optional type 1 and 3 cards are used.

Therefore, the record size for any particular program element/project/task sequence may be 256, 384, or 512 bytes depending on the quantity of input data. Bytes 255 and 256 in the basic block are used to indicate the record size and the nature of additional blocks "chained" to the basic block.

This approach was taken to maximize utilization of disk storage. However, if varying the record sizes makes search or sorting too complex, consideration should be given to forcing consistency of record size to 512 bytes regardless of the type and quantity of data involved for a given program/project set.

Normalizing the funding data to the same fiscal year baseline facilitates the design and execution of the sort and print routines. For example, questions concerning the statistics for funding for a particular year are easily extracted. The flow chart for converting input data cards to the logical data base records is shown in Figure A-2 of Appendix A. Each record contains funding information for the years 1980 through 1999, so that the format will be stable for several years of use, and historical data will be saved automatically.

2.5 DATA BASE OUTPUT AND PRESENTATION

The data output process should be flexible and yet responsive to the specified user needs. In addition to the complete listing of the data base records, the data must also be able to be sorted and screened to permit the creation of specialized listings of data for use in selected analyses or for use as appendixes to the AMP. The proposed data elements for inclusion in the sorting and screening process are identified in this section.

The DAC will also require standard data summary presentation and formats that can be requested repeatedly without requiring any special coding. Examples of data summary outputs that will provide general program visibility that the DAC often requires are presented in the section following. Appendix B contains detailed logic diagrams, algorithms, and program sequence statements that describe the process for producing these summary data presentations.

There are many combinational possibilities for data output. It is expected that a graphical display capability will be developed eventually for summary of the data. We have selected several tabular formats designed for direct application by the DAC. Figures 2-3 through 2-7 show suggested example presentations that could be programmed into the system and requested

MISSION	1980	1981	1982	1983	1984	1985	1986	BEYOND	TOTAL *
A/S	25.0	25.0	25.0	25.0	25.0	(25.0)	(25.0)	(40.0)	(215.0)
RECCE	12.0	12.0	12.0	12.0	12.0	(12.0)	(12.0)	(20.0)	(104.0)
CA/A	5.0	5.0	5.0	5.0	5.0	(5.0)	(5.0)	(7.0)	(42.0)
CA/G	5.0	5.0	5.0	5.0	5.0	(5.0)	(5.0)	(7.0)	(42.0)
STOFF	5.0	5.0	5.0	5.0	5.0	(5.0)	(5.0)	(7.0)	(42.0)
STOEF	5.0	5.0	5.0	5.0	5.0	(5.0)	(5.0)	(7.0)	(42.0)
TMOB	5.0	5.0	5.0	5.0	5.0	(5.0)	(5.0)	(7.0)	(42.0)
SMOB	5.0	5.0	5.0	5.0	5.0	(5.0)	(5.0)	(7.0)	(42.0)
TR	5.0	5.0	5.0	5.0	5.0	(5.0)	(5.0)	(7.0)	(42.0)
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.									
.									
TOTALS *	72.0	72.0	72.0	72.0	72.0	(72.0)	(72.0)	(109.0)	

*Includes both funded and non-funded requirements.

Figure 2-3. FINANCIAL SUMMARY -- FUNDS ACCUMULATED FOR MISSION AREA (EXAMPLE ONLY)

FINANCIAL SUMMARY - FUNDS ACCUMULATED FOR AIRCRAFT TYPE

A/C TYPE	1980	1981	1982	1983	1984	1985	1986	BEYOND	TOTAL *
A-10	12.1	15.0	10.0	7.1	6.8	5.0			56.0
B-52G/H	5.0	12.0	19.0	20.0	19.0	12.0	(5.0)		(92.0)
F-106		2.3	14.0	14.0	14.0	7.0	7.0		58.3
EF-111A			101.9	101.9	101.9	101.9	55.0		462.6
•									
•									
•									
TOTALS *	17.1	29.3	144.9	143.0	141.7	125.9	(67.0)		

*Includes both funded and non-funded requirements.

Figure 2-4. FINANCIAL SUMMARY -- FUNDS ACCUMULATED FOR AIRCRAFT TYPE (EXAMPLE ONLY)

STATUS	1980	1981	1982	1983	1984	1985	1986	BEYOND	TOTAL*
AC	300.0	355.0	345.0	311.0	(311.0)	(305.0)	(300.0)		(2227.0)
AD	100.0	102.0	102.0	130.0	(100.0)	(100.0)	(100.0)		(704.0)
SD	125.0	100.0	100.0	120.0	(131.0)	(136.0)	(125.0)		(837.0)
OG	700.0	700.0	700.0	650.0	(700.0)	(700.0)	(700.0)		(4850.0)
XD	150.0	105.0	105.0	165.0	(165.0)	(170.0)	(150.0)		(1010.0)
.									
.									
.									
TOTALS*	1375.0	1362.0	1352.0	1346.0	(1407.0)	(1411.0)	(1375.0)		

*Includes both funded and non-funded requirements.

Figure 2-5. FINANCIAL SUMMARY BY STATUS (EXAMPLE ONLY)

PROGRAM ELEMENT/ MOD NUMBER	PROJECT/ MOD BUDGET CODE	TASK/ MOD-CLASS	1980	1981	1982	1983	1984	MSN	A/C	TOTAL *
11142	2391		2.5	2.6	(7.8)	(3.0)	(2.2)	SMOB	KC-135	(18.1)
27129			18.9	21.4	11.0	4.3	5.0	A/S	F-111A	60.6
62204	2002		5.4	5.8	(65.4)	(65.6)	(70.0)	TBASE		(212.2)
	6035		2.3	2.5	(65.4)	(65.6)	(70.0)	TBASE		(205.8)
63203	666A		2.1	4.2	(22.3)	(26.4)	(30.5)	TBASE		(85.5)
63249	2627		2.0	7.9	(25.7)	(15.0)	(7.1)	A/S	F-16 F-4E	(57.7)
64201	2258		.5	0.0	(20.1)	(31.2)	(36.0)	A/S		(87.8)
3013	1100	V	30.8	20.9				RECCE CA/G	RF-4C F-111F F-4E	51.7

*Includes both funded and non-funded requirements.

Figure 2-6. FUNDING BY PROGRAM (EXAMPLE ONLY)

PROGRAM ELEMENT/ MOD NUMBER	PROJECT/ MOD BUDGET CODE	TASK/ MOD-CLASS	TITLE	PRIORITY MSN	ECO	OVERALL	RMAP	PATH	NODE	MSN	A/C TYPE
11113	2406		B-52 AVIONICS UPDATE	10	8	80	NLR AV	I I	1 4	STOFF	B-52G/H
11142	2391		KC-135 AVIONICS	9	7	63	NLR AV	I I	1 3	SNOB	KC-135
27129			F-111 SQUADRONS	10	7	70	HARD NLR	IV I	8 A	A/S	F-111D/F
64709	2358		ADVERSE WX STRIKE	7	6	42	TD/V	III	3	A/S	ETF
3013	1100	V	PAVE TACK	10	6	60	TD/V	I	A	RECCE CA/G	RF-4C F-111F F-4E

Figure 2-7. PROGRAM ELEMENT SORT (EXAMPLE ONLY)

by a simple instruction. Funding that is not approved, i.e., recommended or estimated funding, is displayed in parentheses( ). Currently, the total is also placed in parentheses whenever any element of the sum is an estimate or recommendation. Therefore, the total represents both approved and recommended funding requirements.

To maximize data base flexibility, specific sorting and listing of the data in any format should be permitted within the constraints of the output printer. Specific requirements of the output structure must still be determined, but it is recommended that the following data fields be included in any sort capability:

- Mission Area
- Aircraft Type
- Mission Need (Priority)
- Economic Need (Priority)
- Program Element/Mod Number
- Road Map
- Program Status

In addition, capability to retrieve from certain data fields is recommended. The following are suggested data fields and screening options:

- Mission Need Priority (> or < X)
- Economic Need Priority (> or < Y)
- Aircraft Type (Specify only those to be included)
- Mission Area (Specify only those to be included)
- Program Status (Specify only those to be included)
- Program Element (Specify first two digits of class of programs to be included) or Modification Class (Specify IV or V)
- Year of Funding (Specify years or interval over which funding is to be included)
- Road Map (Specify only functional areas to be included)

With no screening criteria specified, a comprehensive listing of the data base will result.

Details relating to the mechanisms for implementing the sorting and screening options are to be developed by the DAC subsequent to this effort.

2.6 SIZING OF THE DATA BASE

Our review of the current five-year defense plan reveals that approximately 140 data records will be required to accommodate the avionics-related program elements (PEs) and their associated projects. Each project requires a separate data record. In addition to the currently approved PEs, it is expected that the data base will contain up to 100 proposed programs under the notation "62XXX", "64YYY", etc. Under the worst-case assumption, we estimate that the data base should be sized as follows:

140 PEs × 4 blocks × 128 bytes/block = 71,680 bytes

100 PEs × 3 blocks × 128 bytes/block = 38,400 bytes

Total bytes = 110,080 bytes

Thus the data base can reside on one 128K byte floppy disk and allow for some future expansion.

We further estimate that when the data for aircraft modification programs are added to the data base, they will require approximately 70,000 bytes. Therefore, it is not possible to include them on the same 128K byte disk with the RDT&E program data. A separate disk would be required. If the disk will hold 256K bytes, a combination of the program data may be desirable.

APPENDIX A

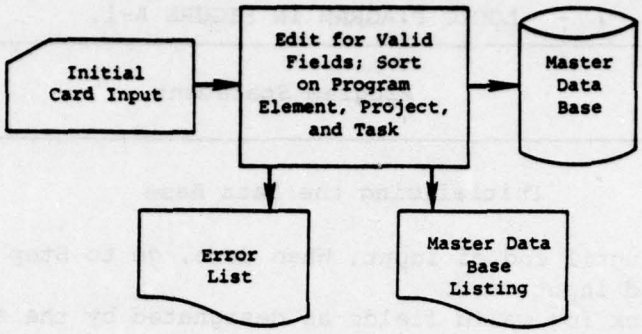
INPUT PROCESSING LOGIC DIAGRAMS AND PROGRAM SEQUENCE STEP DESCRIPTIONS

This appendix contains detailed logic diagrams and program sequence step descriptions for the Avionics Master Plan data base input processing.

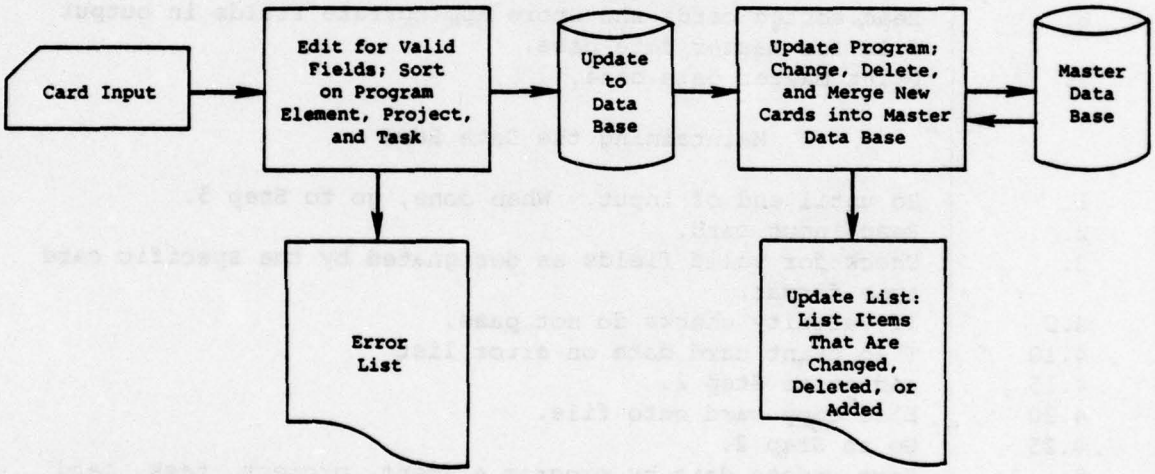
The intent of Figure A-1 is to show a macro-level view of the input process for the data base initialization and maintenance. It shows assembly of the various card types, 1, 2, 3, and 4, for one program element, project, and task, and shows the master data base. This diagram also depicts the overall card input verification and editing routine used in a batch mode of operation.

The flow in Figure A-2 is a further breakdown and is more specific than the flow of Figure A-1.

Tables A-1 and A-2 present a listing of sequential program statements that follow the logic flow.



Initialization of the Data Base



Maintaining the Data Base

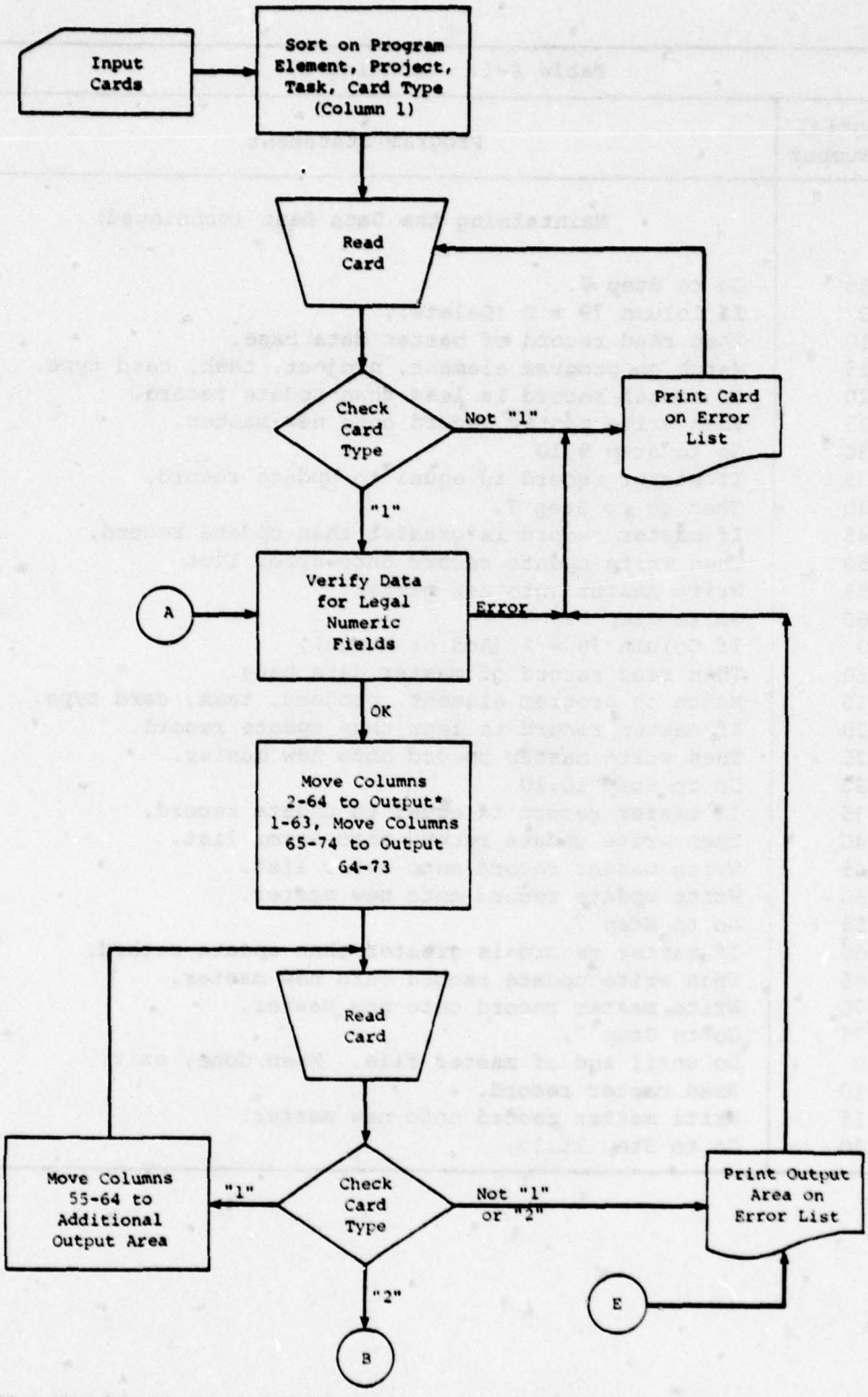
Figure A-1. INITIALIZING AND MAINTAINING THE DATA BASE

Table A-1. TABLE OF PROGRAM STATEMENTS FOR THE LOGIC DIAGRAM IN FIGURE A-1.

Sequential Step Number	Program Statement
	Initializing the Data Base
1.	Do until end of input. When done, go to Step 5.
2.	Read input card.
3.	Check for valid fields as designated by the specific card type format.
4.0	If validity checks do not pass,
4.10	Then print card data on error list.
4.15	Go to Step 2.
4.20	Else copy card onto file.
4.25	Go to Step 2.
5.	Sort data base by program element, project, task, card type.
6.	Read sorted cards and store appropriate fields in output file for master data base.
7.	Print master data base.
	Maintaining the Data Base
1.	Do until end of input. When done, go to Step 5.
2.	Read input card.
3.	Check for valid fields as designated by the specific card type format.
4.0	If validity checks do not pass,
4.10	Then print card data on error list
4.15	and go to Step 2.
4.20	Else copy card onto file.
4.25	Go to Step 2.
5.	Sort update data by program element, project, task, card type.
6.	Do until end of update file. When done, go to Step 11.
7.	Read update record (equivalent to one input card).
8.0	If column 79 = C (Change),
8.10	Then read record of master data base. Match on program element, project, task, card type.
8.20	If master record is less than update record,
8.25	Then write master record onto new master.
8.30	Go to Step 8.10
8.35	If master record is equal to update record,
8.40	Then write update record onto new master..
8.45	Go to Step 7.
8.50	If master record is greater than update record,
8.55	Then write update record onto Error List.

Table A-1. (continued)

Sequential Step Number	Program Statement
	Maintaining the Data Base (continued)
8.60	Go to Step 7.
9.0	If Column 79 = D (Delete),
9.10	Then read record of master data base.
9.15	Match on program element, project, task, card type.
9.20	If master record is less than update record,
9.25	Then write master record onto new master.
9.30	Go to Step 9.10
9.35	If master record is equal to update record,
9.40	Then go to Step 7.
9.45	If master record is greater than update record,
9.50	Then write update record onto error list
9.55	Write master onto new master.
9.60	Go to Step 7.
10.0	If Column 79 = A (Add or Merge),
10.10	Then read record of master data base.
10.15	Match on program element, project, task, card type.
10.20	If master record is less than update record,
10.25	Then write master record onto new master.
10.30	Go to Step 10.10
10.35	If master record is equal to update record,
10.40	Then write update record onto error list.
10.45	Write master record onto error list.
10.50	Write update record onto new master.
10.55	Go to Step 7.
10.60	If master record is greater than update record,
10.65	Then write update record onto new master.
10.70	Write master record onto new master.
10.75	Go to Step 7.
11.0	Do until end of master file. When done, exit.
11.10	Read master record.
11.15	Write master record onto new master.
11.20	Go to Step 11.10.



*Output refers to computer Master Data Data Base Record. See Table 2-6 for byte allocations.

Figure A-2. DETAILED FLOW DIAGRAM

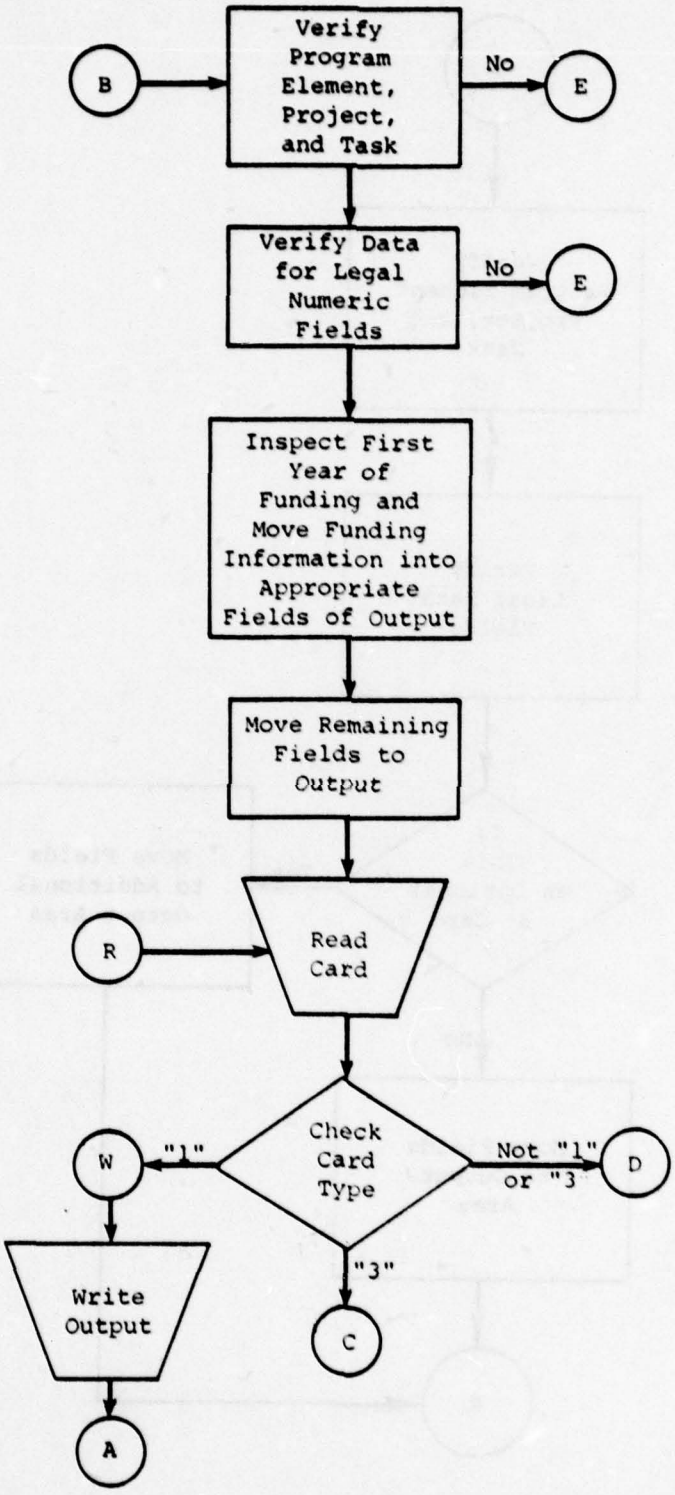


Figure A-2. (continued)

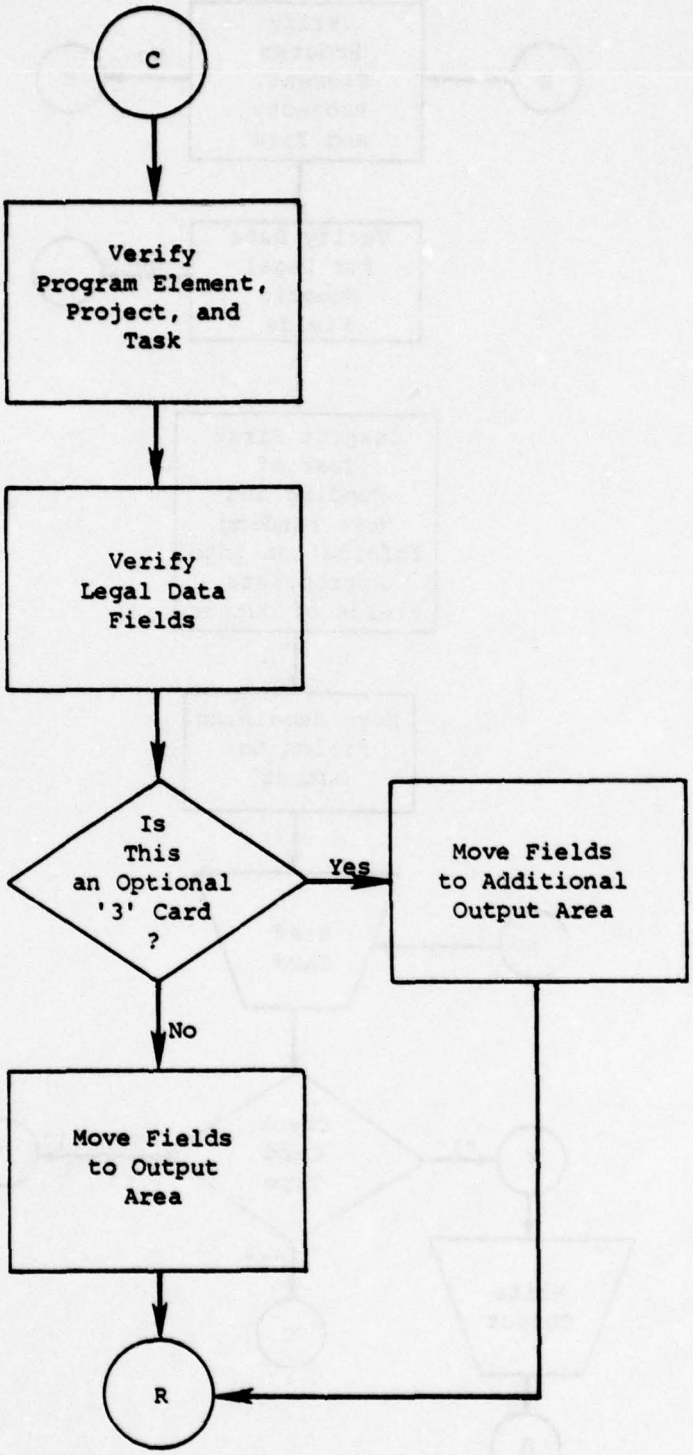
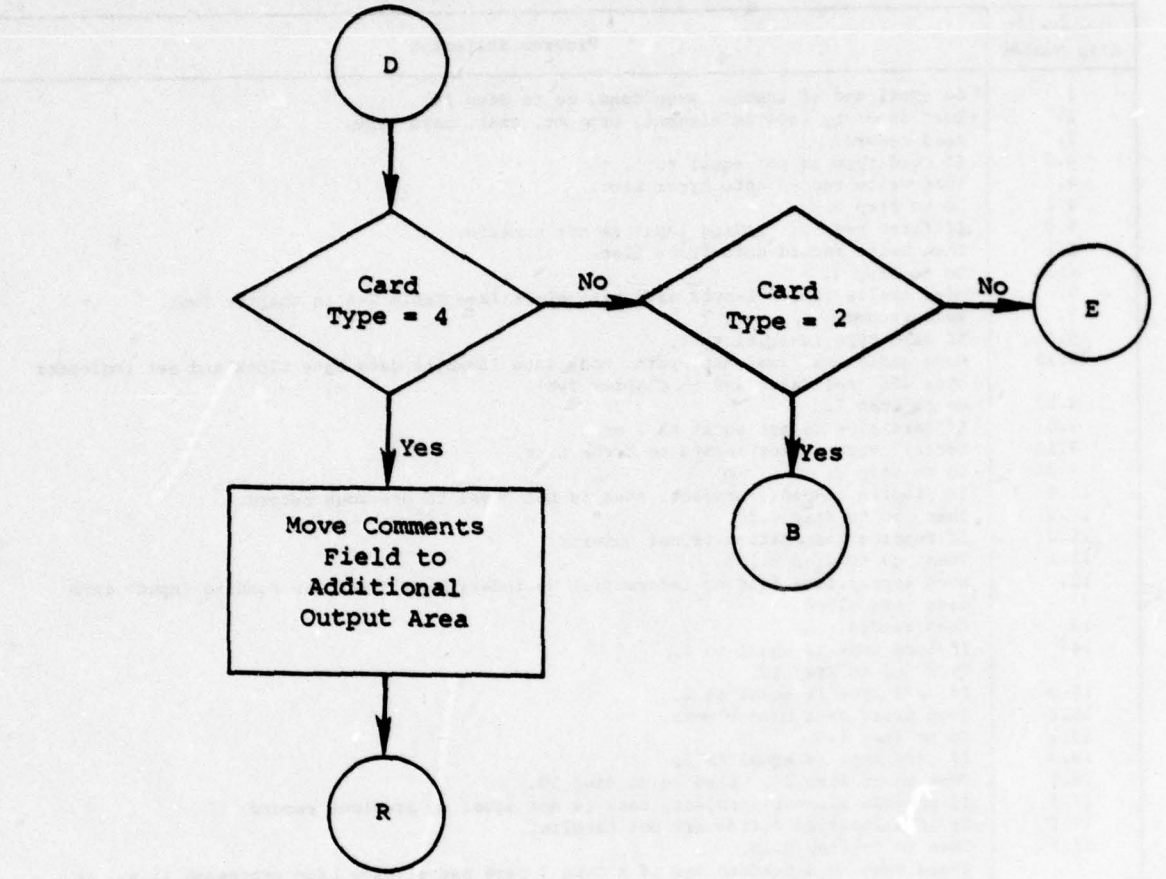


Figure A-2. (continued)



At End of File

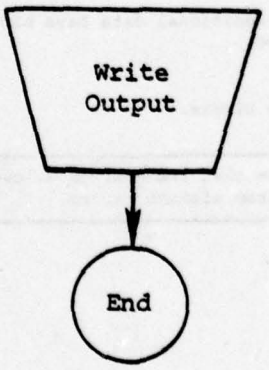


Figure A-2. (continued)

Table A-2. STEPS TO CREATE/UPDATE SEQUENTIAL FILE

Sequential Step Number	Program Statement
1.	Do until end of input. When done, go to Step 24.
2.	Sort input by program element, project, task, card type.
3.	Read record.
4.0	If card type is not equal to 1,
4.1	Then write record onto Error List.
4.2	Go to Step 3.
5.0	If first year of funding input is not numeric,
5.1	Then write record onto Error List.
5.2	Go to Step 3.
6.	Move fields into 256-byte data base block (see Table 2-6 in Chapter Two).
7.	Read record.
8.0	If card type is equal to 1,
8.10	Move additional road map, path, node into 128-byte data base block and set indicator byte 256 (see Table 2-6 in Chapter Two).
8.20	Go to Step 7.
9.0	If card type is not equal to 1 or 2,
9.10	Error: Print error record on Error List.
9.20	Go to Step 3.
10.0	If program element, project, task is not equal to previous record,
10.1	Then go to Step 9.10.
11.0	If funding information is not numeric,
11.1	Then go to Step 9.10.
12.	Move appropriate funding information by indexing on "1st year Funding Input" into data base block.
13.	Read record.
14.	If card type is equal to 2, Then go to Step 10.
15.0	If card type is equal to 1,
15.1	Then write data base blocks.
15.2	Go to Step 5.0.
16.0	If card type is equal to 3,
16.1	Then go to Step 17. Else go to Step 20.
17.0	If program element, project, task is not equal to previous record,
17.1	Or if allocation fields are not numeric,
17.2	Then go to Step 9.10. There must be a test to see if a type 3 card has already been processed (i.e., is this an optional type 3 card?).
18.	Move fields to proper data base block and set indicator byte 256 if this is an optional card (see Table 2-6 in Chapter Two).
19.	Go to Step 13.
20.0	If card type is not equal to 4,
20.1	Then go to step 9.10.
21.	Move comments field to additional data base block and set indicator byte 255 (see Table 2-6 in Chapter Two).
22.	Write data base blocks.
23.	Go to Step 3.
24.0	At end, write data base blocks.
24.1	Exit.

Note: Tests must be made to determine that the maximum allowable number of cards of any type has not been exceeded for a given program element record.

APPENDIX B

DATA OUTPUT LOGIC DIAGRAMS, ALGORITHMS, AND PROGRAM SEQUENCE STEP DESCRIPTIONS

This section contains detailed logic diagrams, algorithms, and program sequence steps for producing the output data summaries described in Section 2.5 of Chapter Two.

The logic flow and program statement sequence shown in Figure B-1, when implemented, will produce any of the three output summaries shown previously in Figures 2-3, 2-4, and 2-5 in Chapter Two.

Figures B-2 and B-3 provide the logic diagrams and program statement sequences associated with the preparation of the summary data previously shown in Figures 2-6 and 2-7, respectively.

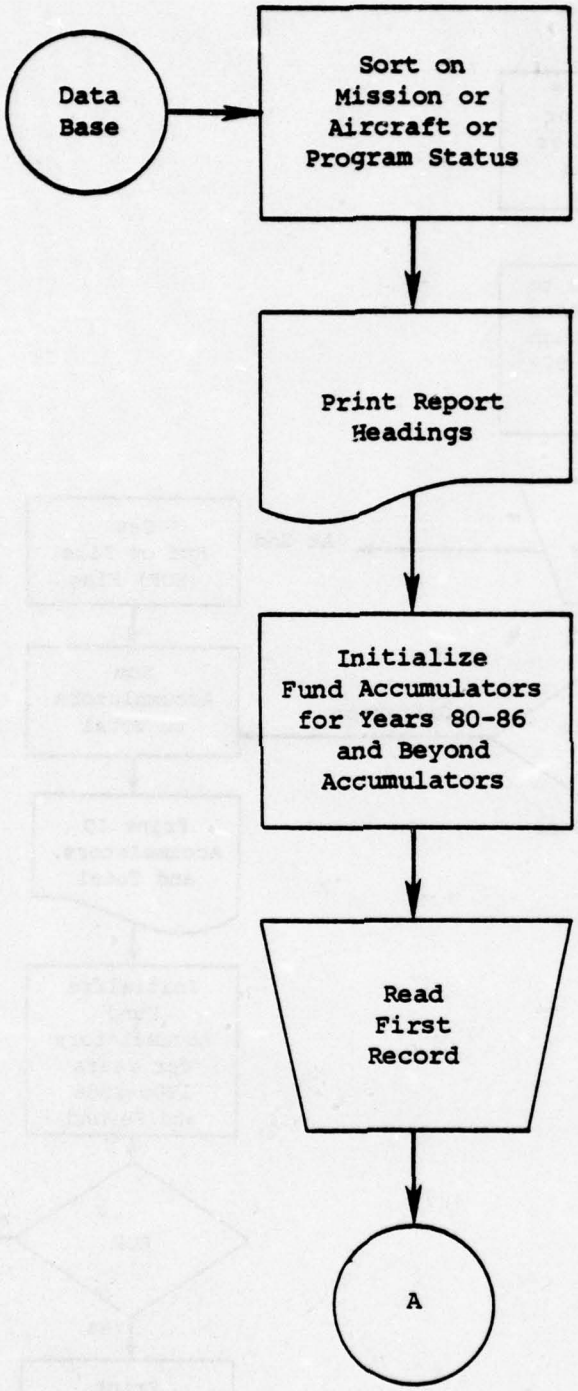


Figure B-1. ROUTINE TO PRINT SUMMARY OF FUNDS ACCUMULATED FOR MISSION AREA OR AIRCRAFT TYPE OR PROGRAM STATUS

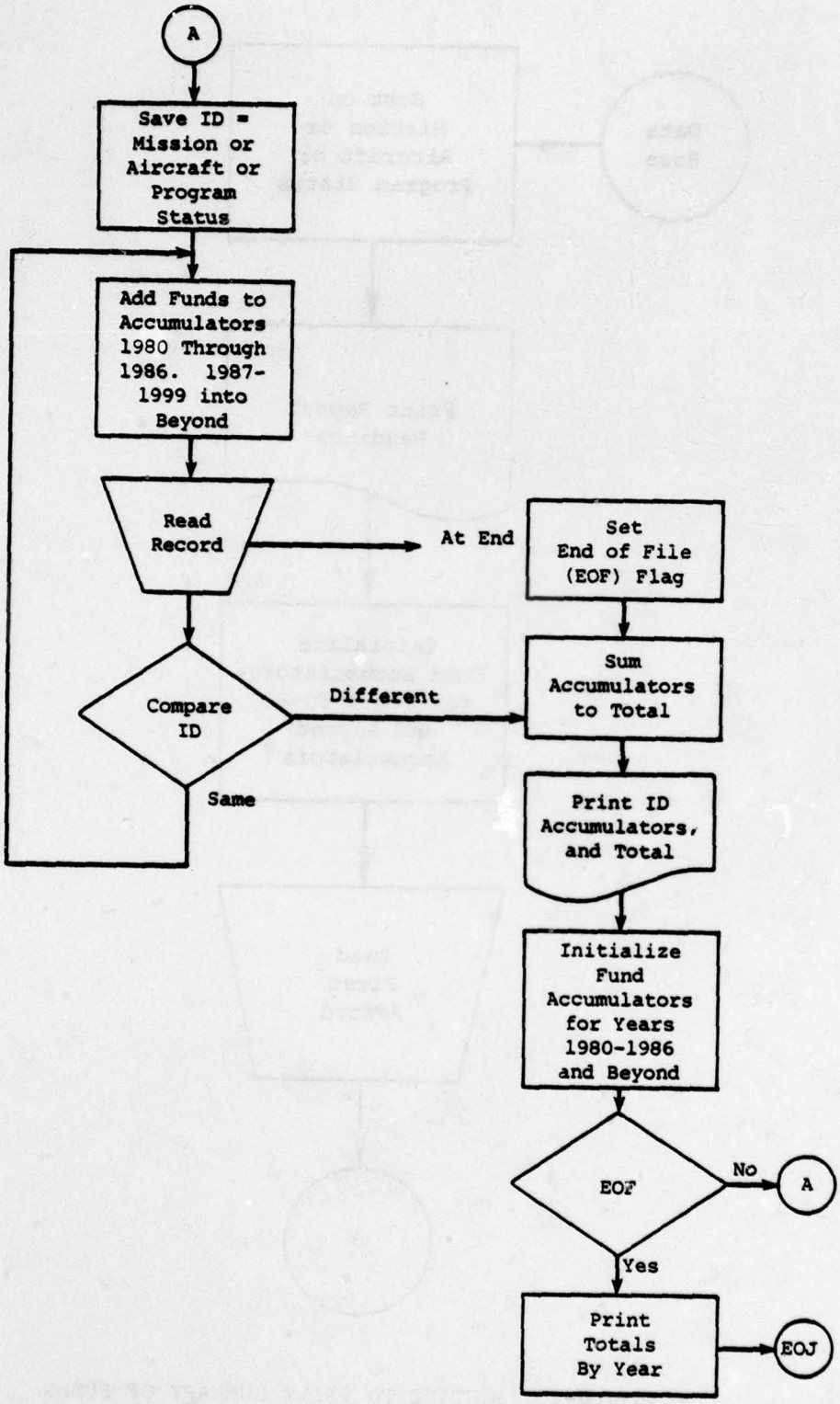


Figure B-1. (continued)

Table B-1. STEPS TO PRINT SUMMARY FUNDS ACCUMULATED FOR MISSION AREA, AIRCRAFT TYPE, OR PROGRAM STATUS*

Sequential Step Number	Program Statement
1.	Input to program: data base sorted by mission area, or aircraft type, or program status, as is appropriate.
2.	Initialize line and page counters, initialize fund accumulators.
3.	Print report headings.
4.	Read two records for one logical record, 256-bytes.
5.	Save ID equal to mission area, aircraft type, or program status.
6.	Add funds from data base to accumulators.
7.	If no additional block indicators are *on* (bytes 255, 256), Then go to step 8. Else**
8.	Read two records for one logical record, 256 bytes. At end of file, set EOF flag.
9.	If ID of previous record is equal to ID of present record, go to Step 6.
10.	Sum accumulators to totals.
11.	Print ID, accumulators, and total.
12.	Check line counter and do new page routine if necessary.
13.	Initialize fund accumulators.
14.	If EOF flag is set, print final totals and exit.
15.	Else go to Step 5.

*The flow for the three funds-accumulated summary routines is the same.

**Logic to test for existence of relevant additional data block (byte 256 *on)* before proceeding to Step 8 is required. Otherwise the additional block specified by byte 255 can be skipped (see Table 2-6).

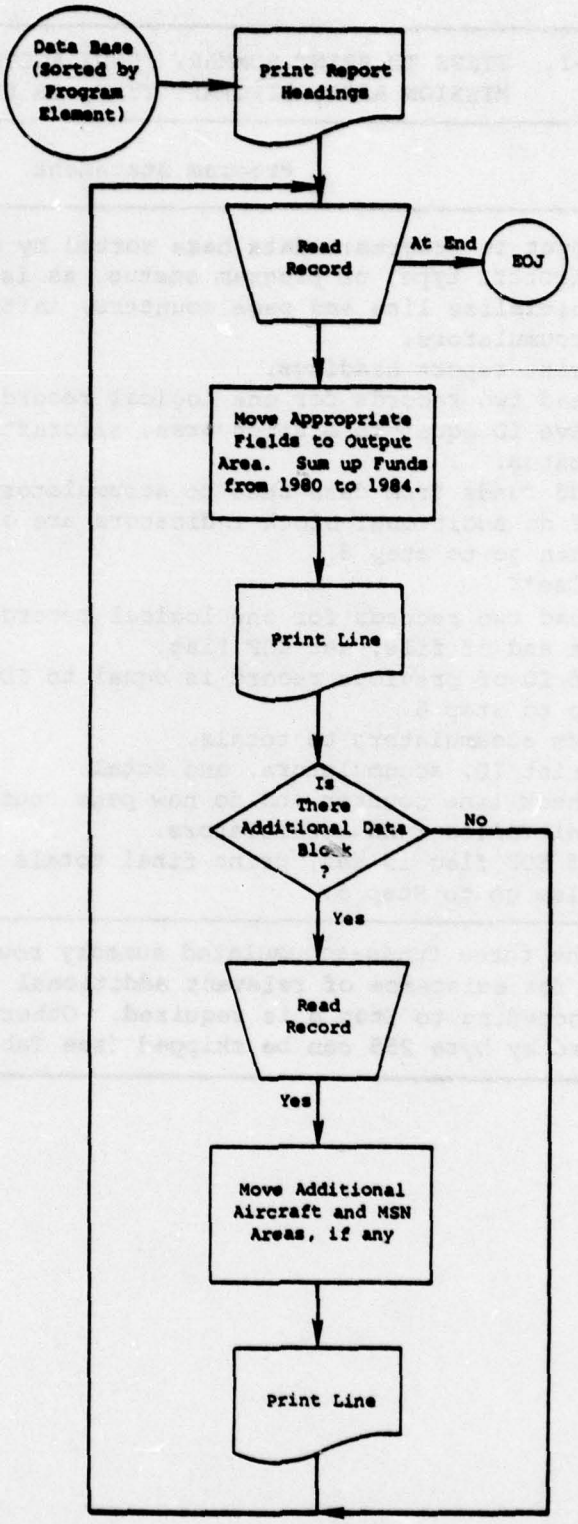


Figure B-2. ROUTINE TO PRINT FUNDING SUMMARY BY PROGRAM

Table B-2. STEPS TO PRINT SUMMARY FUNDING BY PROGRAM

Sequential Step Number	Program Statement
1.	Input to program: data base sorted by program element.
2.	Initialize line and page counters.
3.	Print report headings.
4.	Read two records for one logical record, 256 bytes.
5.	If end of file, exit.
6.	Move appropriate fields to output area.
7.	Convert negative funding amounts to values enclosed by parentheses.
8.	Accumulate funding for years 1980-1984. If any were negative, enclose total in parentheses.
9.	Print line.
10.	Update line counters when line counter equals maximum line count. Do new page routine, increment page counter, initialize line counter.
11.	If no additional block indicators are *on*, go to Step 4. Else*
12.	Read 128-byte record.
13.	If there are additional aircraft and mission area fields, move to output and print line.
14.	Go to Step 4.

*Logic to test for existence of relevant additional data block (byte 256 *on*) before proceeding to Step 12 is required. Otherwise the additional block specified by byte 255 can be skipped (see Table 2-6).

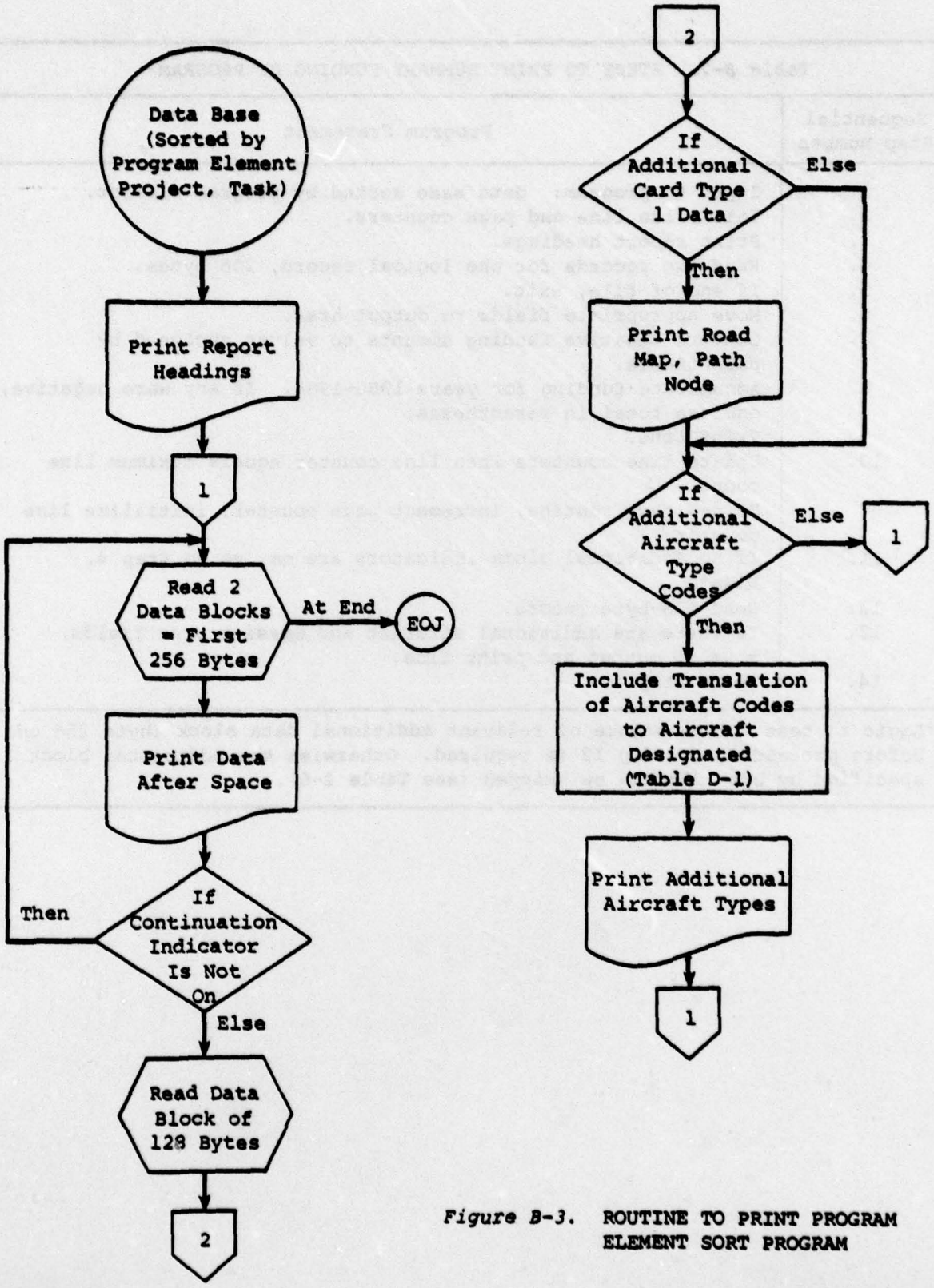


Figure B-3. ROUTINE TO PRINT PROGRAM ELEMENT SORT PROGRAM

Table B-3. PROGRAM ELEMENT SORT REPORT*

Sequential Step Number	Program Statement
1.	Initialize the line and page counters.
2.	Print the headings.
3.	Read two 128-byte data blocks for a logical record of 256 bytes.
4.	If end-of-file condition is reached, exit.
5.	If line counter equals maximum number of lines per page, Then print headers on new page, update page counter, initialize line counter.
6.	Move appropriate data base fields to output area and print line of data after one space.
7.	If no additional block indicators are *on*, go to Step 3. Else**
8.	Read additional data block of 128 bytes
9.	If additional road map, path, and node data, then move these fields to output area.
10.	If additional coded aircraft type specified, then do translation of code to aircraft and move these fields to output area.
11.	If output area is not blank, print from output area.
12.	Go to Step 3.

*The data base is assumed to be sorted by program element, project, and task.

**Logic to test for existence of relevant additional data block (byte 256 *on*) before proceeding to Step 8 is required. Otherwise the additional block specified by byte 255 can be skipped (see Table 2-6).

APPENDIX C

LIST OF SUGGESTED ABBREVIATIONS FOR CONCISE DATA INPUT CODING

Appendix C lists general abbreviations to be used with the program tracking system for the Avionics Master Plan.

LIST OF SUGGESTED ABBREVIATIONS FOR CONCISE DATA INPUT CODING

AAA	Anti-Aircraft Artillery
A/C	Aircraft
ADCOM	Air Defense Command
AEEC	Airlines Electronic Engineering Committee
AFAL	Air Force Avionics Laboratory
AFLC	Air Force Logistics Command
AFR	Air Force Reserve, Air Force Regulation
AFSATCOM	Air Force Satellite Communications (System)
AFSC	Air Force Systems Command
AHARS	Attitude Heading and Reference System
AI	Airborne Intercept
AISF	Avionics Integration Support Facility
ALCM	Air Launched Cruise Missile
ALS (MLS)	Advanced (Microwave) Landing System
ALSS	Advanced Location Strike System
AM	Amplitude Modulation
AMP	Avionics Master Plan
APB	Avionics Planning Baseline
APC	Avionics Planning Conference, Armored Personnel Carrier
APG	Avionics Planning Guidance
APVOI	Advanced PVO Interception
ARM	Anti-Radiation Missile
ARPV	Advanced Remotely Piloted Vehicle
ASF	Air Superiority Fighter
ATBM	Anti-Tactical Ballistic Missile
ATE	Automatic Test Equipment
ATF	Advanced Tactical Fighter
AWACS	Airborne Warning and Control System (E-3 Sentry)
AWTSS	All Weather Tactical Strike System
BIT	Built-In-Test
BITE	Built-In-Test Equipment
BNS	Bombing Navigation System
CAD	Computer Aided Design
CAR	Command Assessment Review
CAS	Close Air Support, Collision Avoidance System
C^2	Command and Control

C^3I	Command, Control, Communications, and Intelligence
CCD	Charge Coupled Device
C/D	Controls and Displays
CEP	Circular Error Probable
CERT	Combined Environmental Reliability Test
CIP	Component Improvement Program
CNPI	Communications, Navigation, Positioning, Identification
COMM	Communications
COMSEC	Communications Security
CRAF	Civil Reserve Air Fleet
CW	Continuous Wave
DAC	Deputy for Avionics Control
DAIS	Digital Avionics Information System
DF	Direction Finder
DID	Data Item Description
DITS	Digital Information Transfer System
DME	Distance Measuring Equipment
DNA	Defense Nuclear Agency
DT&E	Development, Test and Evaluation
EAA	Enhanced Airlift Aircraft
EAR	Electronically Agile Radar
ECM	Electronic Counter Measure
ECCM	Electronic Counter-Counter Measure
EHP	Electrical Hazard Protection
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EMR	Electromagnetic Radiation
EO	Electro-Optical
ERP	Effective Radiated Power
ESB	Enhanced Strategic Bomber
ESM	Electronic Support Measures
ETF	Enhanced Tactical Fighter
EW	Electronic Warfare, Early Warning
EWI	Education with Industry
FAA	Federal Aviation Agency
FAC	Forward Air Controller
FCS	Fire Control System
FD/FI	Fault Detection, Fault Isolation
FEBA	Forward Edge of the Battle Area
F^3	Form, Fit, Function
FIS	Future Identification System
FIT	Fault Identification Test
FLIR	Forward Looking Infrared
FLR	Forward Looking Radar
FM	Frequency Modulation
F/W	Firmware

GBU	Guided Bomb Unit
GCI	Ground Controlled Intercept
GEANS	Gimballed Electrostatic Aircraft Navigation System
GEOREF	World Geographic Reference System
GFE	Government Furnished Equipment
GLCM	Ground Launched Cruise Missile
GOR	General Operational Requirement
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GSF	Ground Support Fighter
HF	High Frequency
HOL	Higher Order Language
HQ	Headquarters
ICAO	International Civil Aviation Organization
ICNIA	Integrated Communications, Navigation, and Identification Avionics
ICS	Interim Contract Support
IDA	Integrated Digital Avionics
IFF	Identification Friend or Foe
IFFN	Identify Friend, Foe, Neutral
IIR	Imaging Infrared
ILS	Instrument Landing System
INS	Inertial Navigation System
IOC	Initial Operational Capability
IOT&E	Initial Operation, Test and Evaluation
IR	Infrared
IRCM	Infrared Counter Measure
J/S	Jamming-to-Signal Ratio
JTIDS	Joint Tactical Information Distribution System
LCC	Life Cycle Cost
LGB	Laser Guided Bomb
LLLTV	Low Light Level Television
LORAN	Long Range Navigation
LOS	Line of Sight
LPIR	Low Probability of Intercept Radar
LRA	Long Range Aviation
LRU	Line Replaceable Unit
LSI	Large Scale Integration
MAA	Mission Area Analysis
MAC	Military Airlift Command
MAJCOM	Major Command
MATE	Modular Automatic Test Equipment
MCF	Military Computer Family
MENS	Mission Element Needs Statement
MFPA	Monolithic Focal Plane Array

MGRS	Military Grid Reference System
MLS	Microwave Landing System
MM	Millimeter
MOA	Memorandum of Agreement
MTBF	Mean Time Between Failures
MTT	Multiple Target Track
MUX	Multiplex
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NAV	Navigation
NCA	National Command Authority
NMLS	National MLS
NRL	Naval Research Laboratory
OAP	Offset Aim Point
O&S	Operation and Support
OCM	Optical Countermeasures
OCCM	Optical Counter-Countermeasures
OFP	Operational Flight Program
OMB	Office of Management of the Budget
PAR	Program Assessment Review
PAT	Passive Angle Tracking
PDM	Program Decision Memorandum
PENAID	Penetration Aid
PKSS	Single Shot Probability of Kill
PLSS	Precision Location Strike System
PMD	Program Management Directive
PMRT	Program Management Responsibility Transfer
POM	Program Objective Memorandum
POS	Position
PRAM	Productivity, Reliability, Availability, Maintainability
PSP	Programmable Signal Processor
PRF	Pulse Repetition Frequency
PVO	Soviet Air Defense
QA	Quality Assurance
QSR	Quick Strike Reconnaissance
RCS	Radar Cross Section
RDT&E	Research, Development, Test, and Evaluation
RECCE, RECON	Reconnaissance
RF	Radio Frequency
RHAW	Radar Homing and Warning
RLA	Repair Level Analysis
R/M	Reliability and Maintainability
RNAV	Area Navigation
ROC	Required Operational Capability
RPV	Remotely Piloted Vehicle
RRG	Requirements Review Group
RWR	Radar Warning Receiver

SAB	Scientific Advisory Board
SAC	Strategic Air Command
SAM	Surface-to-Air Missile
SAR	Synthetic Aperture Radar
SDA	Strike Director Aircraft
SE	System Effectiveness
SEA	Southeast Asia
SEP	Spherical Error Probable
SIF	Selective Identification Feature
SIGINT	Signal Intelligence
SIOP	Single Integrated Operational Plan
SIT	System Integrated Test
SLAR	Side Looking Airborne Radar
SLBM	Submarine Launched Ballistic Missile
SM	System Manager
SNA	Soviet Naval Aviation
SON	Statement of Operational Need
SRAM	Short Range Attack Missile
SRU	Shop Replaceable Unit
STOL	Short Take-Off and Landing
STT	Single Target Track
SWT	Search While Track
TAC	Tactical Air Command
TACAN	Tactical Air Navigation
TAF	Tactical Air Force
TAFIIS	Tactical Air Forces Integrated Information System
TAIS	Tactical Air Intelligence System
T&E	Test and Evaluation
TCSGA	Thermo Condensation Smoke-Generation Apparatus
TDMA	Time Division Multiple Access
TEREC	Tactical Electronic Reconnaissance
TERCOM	Terrain Contour Matching
TFR	Terrain Following Radar
TISEO	Target Identification System Electro-Optical
TRACALS	Traffic Control and Landing System
UHF	Ultra High Frequency
UHF-DF	Ultra High Frequency - Direction Finder
USAFE	U.S. Air Forces in Europe
USAFSS	USAF Security Service
UTM	Universal Transverse Mercator
VHF	Very High Frequency
VLSI	Very Large Scale Integration
VOR	Very High Frequency Omnidirectional Range
V/STOL	Vertical/Short Take-Off Landing
WDA	Weapon Delivery Aircraft
WGS-72	World Geodetic System, 1972
WIC	Warranty Information Center
W/W	Wild Weasel
WX	Weather

APPENDIX D

DATA CODES FOR AIRCRAFT TYPES

Table D-1 provides a numerical coding scheme for identifying aircraft by type to be used with the program tracking system for the Avionics Master Plan.

Table D-1. DATA CODES FOR AIRCRAFT TYPES

Code	Aircraft	Code	Aircraft	Code	Aircraft
000	All major aircraft types in inventory-general application	052	EC-121G/T	108	UV-18B
		053	EC-130E	109	AC-X
		054	EC-135A	110	APF
		055	EC-135N	111	ASTA
		056	EF-111A	112	ATCA
		057	EC-135C	113	ATF
001	A-7D	058	EC-135G	114	AV-X
002	A-10A	059	F-105G	115	FAC-X
003	A-37B	060	F-105F	116	FOI (F-15)
004	AC-130A	061	F-105D	117	RF-X
005	O-2A	062	F-4C	118	BGM-34C
006	OV-10A	063	F-4D	119	Compass Cope
007	O-2B	064	F-4E	120	SCMC
008	AC-130H	065	F-4G	121	ASA
009	Not Used	066	F-5B	122	FWX
010	B-1	067	F/TF-15A	123	FMI
011	B-52D	068	F-16A	124	ETF
012	B-52G	069	F-100D/F	125	ACF
013	B-52H	070	F-101B	126	E-X
014	B-57C	071	F/TF-104G	127	OCTA
015	FB-111A	072	F-105B	128	Not Used
016	B-52F	073	F-106A	129	AMST-CT
017	Not Used	074	F-111A	130	F-5E
018	C-140B	075	F-111D	131	F-5F
019	VC-9C	076	F-111E	132	F-15A
020	C-5A/B	077	F-111F	133	F-15B
021	VC-6A	078	F-15 Intercept	134	F-15C
022	C-7A	079	EC-135P	135	F-15D
023	C-9A	080	Not Used	136	HC-130N
024	C-12A	081	Not Used	137	HC-130P
025	YC-14/15	082	HH-1H	138	VC/C-131D
026	YC-97L	083	TH/UH-1F	139	VC/C-131E
027	C-118A	084	CH-3E	140	F-106B
028	C-123K	085	HH-53B	141	AQM-34L
029	C-130K	086	HARV	142	AQM-34M
030	C-130B	087	Not Used	143	AQM-34V
031	C-130D	088	Not Used	144	HH-3E
032	C-130E	089	DC-130H	145	H-X
033	C-130H	090	RC-130A	146	RC-X
034	HC-130H	091	RC/135A/D/	147	ARPV
035	VC/C-131B		M/S/T/U/V/	148	TR-1
036	NC/C-131H	092	RF-4C	149	T-38B
037	C/NC-135A	093	RF-101C	150	F-101F
038	C-135B/C	094	SR-71A/B	151	UH-1N
039	KC-135A	095	WC-130E	152	UH-1P
040	VC-137B/C	096	WC-135B	153	F-16B
041	C-140A	097	Not Used	154	HH-53C
042	YC-141B	098	Not Used	155	CH-53C
043	EC-135H	099	T-33A	156	C/NC-141A
044	EC-135J	100	T-37B	157	KC-135Q
045	EC-135K	101	T-38A	158	WC-130H
046	EC-135L	102	T-39A/B/F	159	UH-X
047	E-3A	103	T-41C	999	Specific aircraft application but type(s) not certain
048	E-4A/B	104	T-43A		
049	EB-57B	105	Not Used		
050	B/EB-57E	106	U-2		
051	EC-121C/S	107	U-4B		

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This report summarizes ARINC Research activites described in Section 4.3, Statement of Work, of Contract F33657-79-C-0475. The technical effort addressed the development of the architecture for mechanizing the program tracking system used by the Deputy for Avionics Control (ASD/AX) in the Avionics Master Plan (AMP) preparation and in the avionics control function. The tracking system methodology was previously developed by ARINC Research under Contract F04606-76-A-0087/SG04.

The effort described in this document was sponsored by the Aeronautical Systems Division, Deputy for Development Planning (ASD/XRE). The material presented is to be utilized by the ASD Data Processing facility (ADP) in its coding and implementation of the AMP data base storage and retrieval program on the DEC PDP 11T60 computer for use by the Deputy for Avionics Control.